# Chapter 7. Biological Resources

# Chapter 7. Biological Resources

## Environmental Setting

A great diversity of vegetation and wildlife resources exist in California across a broad range of physiographic regions, from the coast, inland across mountain ranges and valleys, to the deserts along the eastern border. Each of these regions can be further subdivided into many habitats defined by the plant communities present and their associated wildlife species. Habitat types include coastal dunes and scrub, desert and valley riparian, mixed conifer, oak woodland, riverine, and annual grassland, and more human-influenced habitats such as agricultural land, pastureland, and urban areas.

The varied habitat types within California are conducive to a great diversity of plant and animal species, many of which are endemic to the state. As a consequence of habitat conversion to agriculture and residential and commercial development, many of these species have become rare, threatened, or endangered (California Department of Fish and Game 1998a, 1998b). For example, 216 plant species have been state listed as endangered, threatened, or rare under Section 1904 (Native Plant Protection Act of 1977) and Sections 2074.2 and 2075.5 (California Endangered Species Act of 1984) of the Fish and Game Code, 132 plant species have been federally listed as endangered or threatened under the Federal Endangered Species Act of 1973, and another 58 species are proposed or candidates for listing. Additionally, 137 species of animals have been state or federally listed as threatened or endangered and eight animal species are classified as candidates for state listing or proposed for federal listing. Many others are considered special-status species by local, state, and federal agencies but only listed species are included in the following discussion.

This section focuses on the habitat types and resources in areas where biosolids will be applied, including areas with large-scale agricultural, silvicultural, and horticultural uses and those where disturbed lands are being reclaimed. Most of the habitat in areas where biosolids would be applied is agricultural, although some natural terrestrial habitats could also be affected, such as annual grasslands. This analysis focuses on the effects the GO will have on biological resources on a programmatic level instead of on specific effects of individual projects. The following sections are subdivided into specific activities for which biosolids application would be used.

# Agricultural Activities

Agricultural activities include soil cultivation for crop production and raising livestock. Agricultural activities usually take place on flat to gently rolling terrain, primarily in the Central Valley, coastal valleys, the Modoc Plateau, and in desert valleys where irrigation is available, such as the Imperial Valley and the lands adjacent to the Colorado River. Habitat types on agricultural lands include cropland, orchard-vineyard, and pasture.

## Vegetation

Croplands typically comprise row crops, hay, or grains planted in monocultures. Natural vegetation and weeds are generally eliminated by flood irrigation, tillage, and herbicide application. Orchards and vineyards usually contain single tree, shrub, or vine species planted in rows. A low-growing herbaceous understory or cover crop may be present but is generally managed to control its growth. Pasture consists of perennial grasses and legumes planted for livestock forage, although the vegetation also may include native grasses and forbs and weedy non-natives. Pastures are managed to improve forage quality using irrigation, fertilizer application, and weed control. Many natural habitats occur adjacent to agricultural lands, the most common of which are annual grassland, seasonal wetlands, vernal pools, Great Basin grassland, coastal scrub, saltbush scrub, desert scrub, Great Basin scrub, riparian woodland, and oak woodland.

## Wildlife

Although natural communities provide the highest value for wildlife, many of these natural habitats have been largely replaced by agricultural habitats throughout California with varying benefits to wildlife. The intensive management of agricultural lands, including disking, grazing, crop rotation, and the use of chemicals, further reduces the value of agricultural lands for wildlife. In spite of intensive management, however, many wildlife species have adapted to particular crop types and now use them for foraging and nesting. Compared to other agricultural crops, rice and grain are considered high-value crops for wildlife because many species forage on waste grain, and flooded rice fields provide habitat similar to some natural wetlands. Pasture also provides abundant forage and cover. Compared to rice and grains, row crops and orchards provide moderate-quality habitat because they provide only limited cover and foraging opportunities. Vineyards and cotton crops provide low-quality wildlife habitat because they are frequently disturbed and require many applications of herbicides, resulting in limited foraging and nesting opportunities and lack of cover.

Table 7-1 provides a list of representative common wildlife species that could occur in each habitat available for biosolids treatment. The composition of common wildlife species in each of the various habitat/treatment types will vary in each RWQCB region.

### Special-Status Species

**Plants.** Special-status plants would not be expected to occur in croplands, orchards, or vineyards because they are typically eliminated by cultivation. They are also unlikely to occur in pastures because of habitat modification and intense grazing, although some plants could be present in pasture habitat where there is limited habitat alteration or less-intense grazing. Because pasture is not a habitat category used in the California Native Plant Society (CNPS) inventory or the Natural Diversity Data Base (NDDB), no specific information on the occurrence of special-status plant species in pastures was found. The habitat most similar to pasture is grassland and many special-status plants have been reported to occur in grassland habitats (coastal prairie, Great Basin grassland, meadows, and valley and foothill grassland) statewide (Table F-1 in Appendix F). Some endangered grassland species that were once widespread include Bakersfield cactus, California jewelflower, and Hartweg's adobe sunburst.

**Wildlife.** A number of special-status wildlife species could occur in agricultural habitats throughout California. Grain crops and pasture provide important habitat for species such as the Aleutian Canada goose, Swainson's hawk, and greater sandhill crane. Flooded rice fields provide habitat for the giant garter snake and rangeland provides habitat for a number of other listed species including San Joaquin kit fox, blunt-nosed leopard lizard, San Joaquin antelope squirrel, and desert tortoise, which are often in relatively high densities, such as those in the southern San Joaquin Valley (Table F-2 in Appendix F).

## Silvicultural Activities

Silvicultural activities include managing, developing, and harvesting forests and trees for lumber, paper manufacturing, and other products. Silvicultural activities take place primarily in tree-dominated habitats in the northern Coast Ranges, Cascade Ranges, Modoc Plateau, and Sierra Nevada. General categories of tree-dominated habitats include broad-leaved upland forest, montane coniferous forest, north coast coniferous forest, and closed-cone coniferous forest. Tree-dominated habitats also include tree plantations, such as eucalyptus groves in the Central Valley.

## Vegetation

Forest habitats are characterized by stands of trees. Coniferous forest habitats often comprise mixed associations of pines, firs, Douglas-fir, and other conifer species, although stands in closed-cone coniferous forest may be monotypic. In broad-leaved upland forest, conifer species occur in association with broad-leafed such as oaks, tan-oak, and madrone. The forest understory may consist of a dense shrub layer or may be open and parklike. The groundcover is often composed of sparse perennial herbs. In many areas where natural fires have been suppressed, forest stands are now dominated by dense stands of young conifers and support few herbs or shrubs.

Tree plantations are generally similar to orchards and are composed of single tree species planted in rows. A low-growing herbaceous understory or cover crop may be present but is generally managed to control its growth.

## Wildlife

Table 7-1 provides a summary of common representative wildlife species that could occur in silvicultural sites throughout the state.

## Special-Status Species

**Plants.** Special-status plants occur in forest habitats (broad-leaved upland forest, closed-cone coniferous forest, lower montane coniferous forest, upper montane coniferous forest, and North Coast coniferous forest) in California, although fewer than in grassland habitats (Table F-1 in Appendix F). Special-status plant species would not be expected to occur in tree plantations because they are usually eliminated by habitat conversion or cultivation.

**Wildlife.** Similar to agricultural habitats, forested habitats throughout California provide habitat for a variety of special-status wildlife species including California red-legged frog, both the California and northern spotted owls, marbled murrelet, and California condor (Table F-2 in Appendix F). However, special-status wildlife species would not be present during biosolids application in tree plantations that would occur after the site has been harvested.

## Table 7-1.
## Characteristics of Habitat Types Authorized for Treatment under the General Order

| Common Habitat | Description | Representative Common Wildlife Species |
|---|---|---|
| **Agricultural Activities** | | |
| Pasture | Irrigated and nonirrigated lands that are dominated by grasses and legumes. Vegetation composition varies with management practices; may include wild oats and alfalfa. | Black-bellied plover, killdeer, long-billed curlew, white-faced ibis, California voles, Botta's pocket gophers, California ground squirrels |
| Orchard-Vineyard | Cultivated fruit or nut-bearing trees and grape vines. Habitat uniform and intensively managed; understory vegetation usually sparse. | Mourning dove, American crow, scrub jay, northern flicker, Lewis' woodpecker, yellow-billed magpies, American robin, deer mouse, gray squirrel, black-tailed hare, racoon, and mule deer |
| Row Crops | Tomatoes, broccoli, artichokes, lettuce, sugar beets, and strawberries. Intensive management and use of pesticides limit use by wildlife. | Swainson's hawks, red-tailed hawks, black-shouldered kites, California vole, deer mouse, and California ground squirrel |
| Grain | Barley, wheat, corn, and oats. Intensive management and use of pesticides limit use by wildlife. | Greater white-fronted geese, tundra swans, red-winged black birds, Brewer's blackbirds, ring-necked pheasants, waterfowl, western harvest mice, wild pigs and tule elk |
| Rice | Has some of attributes of seasonal wetlands but is intensively managed and benefits are reduced. Provides nesting and foraging habitat for waterfowl and shorebirds. Irrigation ditches used to flood rice fields often contain dense cattail vegetation. | Mallard duck, Canada geese, sandhill crane, northern harriers, black-shouldered kites, Virginia rail, American bittern, snowy egret, marsh wren, common yellowthroat, song sparrow, California voles, and deer mice |
| Cotton | Cotton is of limited value to wildlife because of intensive management of the crop and use of chemicals to control pests and disease. | Mourning doves, killdeer, American pipet, horned lark, and house mice |
| Annual Grassland | Open stand of grasses primarily on flat plains to gently rolling foothills, ridges, and south-facing slopes. | Western toad, gopher snake, northern harrier, killdeer, western kingbird, loggerhead shrike, savannah sparrow, pocket gopher, American badger, and coyote |

**Table 7-1.**
**Continued**

| Common Habitat | Description | Representative Common Wildlife Species |
|---|---|---|
| **Silvicultural Activities** | | |
| Montane-hardwood conifer and montane hardwood | Stands with overstory consisting primarily of California black oak, tanoak, Douglas-fir, and madrone with understory of shrubs and sparse herbaceous layer. | Sharp-tailed snake, western rattlesnake, scrub jay, band-tailed pigeon, western gray squirrel, mule deer, and black bear |
| Mixed conifer | Forest stands dominated by associations of ponderosa pine, Jeffrey pine, white fir, incense cedar, Douglas-fir, sugar pine, and black oak. | Ensatina, California mountain kingsnake, Steller's jay, western tanager, northern flying squirrel, and Allen's chipmunk |
| Douglas-fir | Forest stands dominated by Douglas-fir overstory and tanoak understory. | Pacific giant salamander, northwestern garter snake, western flycatcher, golden-crowned kinglet, varied thrush, Trowbridge's shrew, Douglas squirrel, and dusky-footed woodrat |
| Jeffrey pine, ponderosa pine and eastside pine | Open forest stands dominated by Jeffrey or ponderosa pine. | White-headed woodpecker, brown creeper, northern flying squirrel, American martin, and mule deer |
| Eucalyptus | Eucalyptus habitats range from single-species thickets with little or no shrubby understory to scattered trees over a well-developed herbaceous and shrubby understory. Usually eucalyptus forms a dense stand with a closed canopy. | Alligator lizard, gopher snake, crow, raven , barn owl, red-shouldered hawks, red-tailed hawks, and woodrat |
| **Horticultural Activities** | | |
| Row crops | See Agricultural Activities above | |
| Orchard-Vineyard | See Agricultural Activities above | |
| Ornamental | Urban vegetation such as tree grove, street strip, shade tree/lawn, lawn, and shrub cover. Tree groves have a continuous canopy whereas street strip trees may have continuous or discontinuous canopies. | California slender salamander, rock dove, house sparrow, startling,, scrub jay, mockingbird, house finch, wrentit, chesnut-backed chickadee, California quail, plain titmouse, racoon, opossum, striped skunk |

## Horticultural Activities

Horticultural activities include the cultivation of fruits and vegetables as well as ornamental plants. Cultivation of fruits and vegetables is discussed above under agricultural activities. Ornamental plants are cultivated under similar circumstances and in the same general areas as fruits and vegetables. Habitat consisting of large-scale plantings of ornamental plants would be classified as cropland.

### Vegetation

Ornamental plantings generally consists of single annual or perennial herb, shrub, or tree species planted in rows. Natural vegetation and weeds are generally eliminated by tillage and herbicide application.

### Wildlife

Table 7-1 provides a summary of common representative wildlife species that could occur in horticultural sites throughout the state.

### Special-Status Species

**Plants.** Special-status plant species would not be expected to occur in ornamental plantings because they are usually eliminated by cultivation.

**Wildlife.** Special-status wildlife species are not typically expected to occur in ornamental plantings because suitable habitat is not generally available (Appendix F). There are exceptions, however—ornamental trees can be used by raptors, including the state-listed Swainson's hawk.

## Land Reclamation Activities

Land reclamation activities are carried out to revitalize or restore lands that are damaged from past or present land uses. Typical reclamation activities include establishing vegetation on mine tailings and revegetating rangelands degraded by severe grazing. Reclamation activities could take place anywhere in the state.

### Vegetation

Vegetation present in reclamation areas depends on the type of activities that have disturbed the landscape. Mining activities remove the vegetation and soil and natural revegetation proceeds slowly, if at all. Other activities, such as heavy grazing, may alter the original composition of the plant community or promote colonization by disturbance-tolerant noxious weeds.

### Wildlife

Table 7-1 provides a summary of common representative wildlife species that could occur on land reclamation sites throughout the state.

### Special-Status Species

**Plants.** Special-status plants would not be expected to occur in areas where past disturbance has eliminated the vegetation or where vegetation did not previously grow, such as on mine tailings. In other circumstances, where the vegetation has been altered but not removed, such as in heavily grazed rangeland, it is possible that special-status plants species are present.

**Wildlife.** A number of special-status wildlife species have potential to occur in disturbed areas, including bats (under bridges and in abandoned mines), desert tortoise, blunt-nosed leopard lizard, and San Joaquin kit fox (Appendix F).

## Regulatory Setting

### Federal Endangered Species Act

USFWS (plants, wildlife, and resident fish) and the National Marine Fisheries Service (NMFS) (anadromous fish and marine fish and mammals) oversee the federal Endangered Species Act (ESA). Section 7 of the ESA mandates that all federal agencies consult with USFWS and NMFS to ensure that the federal agencies' actions do not jeopardize the continued existence of a listed species or destroy or adversely modify critical habitat for listed species. A federal lead agency under the National Environmental Policy Act (NEPA) is required to consult with USFWS or NMFS if it

determines that the proposed action "may affect" a listed species. This determination is made through preparation of a biological assessment. USFWS or NMFS will subsequently provide a Biological Opinion on wildlife species that are federally listed, proposed, or candidates for listing as threatened or endangered.

Section 9 of the federal ESA prohibits the take of any wildlife species listed as endangered, including the destruction of habitat that prevents species recovery, without an incidental take permit. "Take" is defined as harassing, harming, pursuing, hunting, shooting, wounding, killing, trapping, capturing, collecting, or attempting to engage in any such conduct. Wildlife federally listed as threatened are protected from take under Section 4 of the ESA.

The take prohibitions under Section 9 of the federal ESA apply to only fish and wildlife species; however, Section 9 does prohibit the unlawful removal, collecting, or malicious damage or destruction of any endangered plant from federal land. Section 9 prohibits acts to remove, cut, dig up, damage, or destroy any endangered plant in nonfederal areas in knowing violation of any state law or in the course of criminal trespass. Candidate species and species that are proposed or under petition for listing receive no protection under Section 9 of the federal ESA.

## Federal Migratory Bird Treaty Act

The Migratory Bird Treaty Act states that without a permit issued by the U.S. Department of the Interior, it is unlawful to pursue, hunt, take, capture, or kill any migratory bird.

## Bald and Golden Eagle Protection Act

The Bald and Golden Eagle Protection Act makes it illegal to import, export, take (which includes molest or disturb), sell, purchase, or barter any bald eagle or golden eagle.

## California Endangered Species Act

The California ESA requires state agencies to seek and conserve threatened and endangered species (Section 2055) and restricts all persons from taking listed species.

DFG administers the act and authorizes take under Section 2081 agreements (except for designated "fully protected species").

The California ESA defers to the California Native Plant Protection Act of 1977, which prohibits importing of rare and endangered plants into California, taking of rare and endangered plants, and selling of rare and endangered plants. State-listed species are protected mainly in cases where state agencies are involved in projects under CEQA. In this case, plants listed as rare under the California Native Plant Protection Act are not protected under the California ESA but can be protected under CEQA. The following activities are exempt from the California Native Plant Protection Act:

- agricultural operations;
- fire control measures;
- timber harvest operations;
- mining assessment work;
- removal of plants by private landowners on private land for construction of canals, ditches, buildings, roads, or other rights-of-way; and
- removal of plants for performance of a public service by a public agency or a publicly or privately owned public utility.

## Clean Water Act, Section 404

The U.S. Army Corps of Engineers (Corps) and the U.S. Environmental Protection Agency (EPA) regulate the placement of fill into "waters of the United States" under Section 404 of the Clean Water Act. Waters of the United States include lakes, rivers, streams and their tributaries, and wetlands. Wetlands are defined for regulatory purposes as areas inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions (33 CFR 328.3, 40 CFR 230.3). Project proponents must obtain a permit from the Corps for all discharges of fill material into waters of the United States, including wetlands, before proceeding with a proposed action.

The Corps may either issue individual permits on a case-by-case basis or general permits on a program level. General permits are "prior-authorized"— issued to cover similar

activities that are expected to cause only minimal adverse environmental effects. Nationwide Permits (NWPs) are a type of general permit that have been issued to cover particular fill activities. NWPs have a set of conditions (general and Section 404 only) that must be met for the permits to apply to a particular project, as well as specific conditions that apply to each NWP.

# Impacts and Mitigation Measures

## Approach and Methods

This section describes impacts on vegetation and wildlife and proposes mitigation measures to avoid, reduce, or minimize impacts to a less-than-significant level. The evaluation of impacts is supported by the information provided in the environmental settings and by the following assumptions about the GO:

- there would be no staging activities or biosolids applications within 100 feet of wetlands, streams, or water bodies~~;~~ and
- ~~there would be no biosolids application on nonarable lands; and~~

biosolids application could occur in any portion of the state except for the specified GO exclusion areas.

Because biosolids application could occur throughout the state, detailed site- and species-specific effects of biosolids application on native plants and wildlife were not evaluated; the following discussion focuses on general impacts to biological resources and the regulatory consequences of applying biosolids to land for use in agriculture, silviculture, horticulture, and land reclamation.

## Thresholds of Significance

According to State CEQA Guidelines, a project is considered to have a significant impact on biological resources if it would:

- reduce the number of a special-status plant or animal species;
- substantially affect habitat for special-status plant or animal species;

- substantially disturb biologically unique or sensitive natural communities (e.g., riparian woodland, vernal pools, emergent wetland);
- cause long-term degradation of common plant communities or wildlife habitat because of substantial alteration of landform or site conditions (e.g., alteration of wetland hydrology);
- substantially reduce local population size due to direct mortality or habitat loss, lowered reproductive success, or habitat fragmentation;
- substantially interfere with the movement of any resident or migratory wildlife species;
- substantially fragment or isolate wildlife habitats; or
- substantially disturb wildlife by human activities.

## Definition of Special-Status Species

Special-status species are plants and animals that are legally protected under state and federal ESAs or other regulations, and species that are considered sufficiently rare by the scientific community to qualify for such listing. Special-status plants and animals are species in the following categories:

- plants listed or proposed for listing as threatened or endangered under the federal ESA (50 CFR 17.12 [listed plants], 50 CFR 17.11 [listed animals], and various notices in the Federal Register [proposed species]};
- plants that are candidates for possible future listing as threatened or endangered under the federal ESA (62 FR 182:49397-49411, September 19, 1997);
- plants listed or proposed for listing by the State of California as threatened or endangered under the California ESA (14 CCR 670.5);
- plants listed under the California Native Plant Protection Act (California Fish and Game Code, Section 1900 et seq.);
- plants that meet the definition of rare or endangered under CEQA (State CEQA Guidelines, Section 15380), including those considered by CNPS to be rare, threatened, or endangered in California (Lists 1B and 2 in Skinner and Pavlik 1994);

- animal species of special concern to DFG (Remsen 1978 [birds], Williams 1986 [mammals], and Jennings and Hayes 1994 [amphibians and reptiles]; and
- animals fully protected in California (California Fish and Game Code, Section 3511 [birds], 4700 [mammals], and 5050 [reptiles and amphibians]).

## Impacts of Agricultural and Horticultural Use

### Impact: Reduction in the Number of a Special-Status Plant or Wildlife Species

Part 503 in Title 40 of the CFR prohibits the placement of biosolids if it is likely to adversely affect a threatened or endangered species or designated critical habitat. The GO does not address threatened or endangered species in its prohibitions, nor does it require dischargers to disclose information about the actual or potential occurrence of threatened or endangered species in the NOI or direct the RWQCB to address potential effects of biosolids application on threatened or endangered species during its review of the NOI. Therefore, the proposed project has the potential to significantly affect special-status plant and wildlife species by authorizing activities that could result in the reduction in the number of individuals of these species.

Biosolids application in connection with most agricultural and horticultural activities would not have a significant effect on special-status plant species. In general, cultivation would have already removed any previously existing vegetation and altered the physical and biological environment such that natural reestablishment of the indigenous flora and plant community would be precluded.

Biosolids application could result in the loss of special-status plants or animals if it is applied to natural terrestrial habitats (i.e., rangelands) or any lands that have been fallow for more than 1 year. Although the constituents of the biosolids material (e.g., nitrates, trace metals) could have a physiological effect on plants, the primary effects of biosolids application on plants would be physical removal and habitat alteration. Disking to incorporate biosolids into the soil would remove the natural vegetation and alter soil structure, and the biosolids themselves would alter soil chemistry, further altering soil structure. Tilling could result in direct mortality to listed wildlife species that live in burrows (e.g., San Joaquin kit fox, blunt-nosed leopard lizard, and San Joaquin ground squirrel).

Depending on the individual species and the magnitude of the loss or reduction in number of special-status plant or wildlife species, this could be considered a significant impact.

Implementation of Mitigation Measure 7-1 would reduce this impact to a less-than-significant level.

**Mitigation Measure 7-1: ~~Conduct a Site Assessment on Natural Terrestrial Habitat and Fallow Lands for Special-Status Plant and Wildlife Species. The NOI should be modified~~Modify Pre-Application Report and Provide Biological Information.** The pre-application report shall be revised to include a ~~section~~location for the ~~applicant~~discharger to indicate whether the ~~site where biosolids would be applied~~land application site contains natural terrestrial habitat areas or whether it has been fallow for more than 1 year. ~~RWQCB staff will evaluate each project to determine if the biosolids would be applied to natural terrestrial habitats or any lands that have been fallow for more than 1 year and that have not been continually disked. If RWQCB staff determines that natural terrestrial habitats or lands that have been fallow for more than 1 year are present on the project site, a site assessment must be conducted to determine whether there is potential for~~The discharger must submit a report that states whether special-status species ~~to occur and whether or not they could be affected by the application of biosolids. If there are no special-status species present, RWQCB may continue with the project evaluation~~occur on the site. If special-status species ~~could be affected, the project would not be authorized under the GO unless the applicant submits a plan to mitigate for any significant impacts on special-status species, obtains the appropriate permits, and agrees to implement the mitigation~~occur on the site, the report must identify the measures that will be taken to mitigate or avoid impacts on these species; this report must be forwarded to the appropriate regional office of the DFG and the Endangered Species Unit of the USFWS in Sacramento for review and approval of the mitigation strategy. The report must be prepared by a qualified biologist.

## Impact: Substantial Disturbance of Biologically Unique or Sensitive Natural Communities

The GO specifically excludes biosolids applications in several areas that have been recognized to contain unique and valuable public resources (See Chapter 2 for a description of these locations). The GO also prohibits biosolids applications in surface waters and on saturated soils, including wetlands. However, the GO does not address unique or sensitive natural communities that lie outside of the specified exclusion areas. Therefore, the proposed project has the potential to adversely affect biologically unique or sensitive natural communities, such as seasonal wetlands and vernal pools.

Biosolids application on cultivated lands would not have an impact on biologically unique or sensitive natural communities because cultivation would have already removed any previously existing vegetation and altered the physical and biological environment such

that natural reestablishment of the indigenous flora and plant community would be precluded. However, the use of biosolids to enhance the fertility of lands considered to be of marginal value as range or cropland or to convert rangeland to pasture or cropland could have a significant impact on sensitive natural communities such as native grasslands, oak woodlands, and saltbush scrub.

The substantial disturbance of more than 10% or 10 acres of a biologically unique or sensitive natural community, whichever is less, would be a significant impact. Implementation of Mitigation Measure 7-2 would reduce this impact to a less-than-significant level.

**Mitigation Measure 7-2: ~~Conduct~~Modify Pre-Application Report a~~Site Assessment~~nd Provide Information on ~~Natural Terrestrial Habitats for~~ Biologically Unique or Sensitive Natural Communities.** The ~~NOI should~~pre-application report shall be ~~modified~~revised to include a ~~section~~location for the ~~applicant~~discharger to indicate whether the ~~site where biosolids will be applied is an existing agricultural operation or whether it could contain~~land application site contains biologically unique or sensitive natural communities. ~~RWQCB staff will evaluate each project to determine whether the biosolids would be applied to natural terrestrial habitats. If RWQCB staff determines that natural terrestrial habitats are present on the project site, a site assessment must be conducted to determine whether biologically unique or sensitive natural communities occur and whether they could be disturbed by~~If the application ~~of biosolids. If there are no biologically unique or sensitive natural communities present, RWQCB may continue with the project evaluation. If biologically unique or sensitive natural communities are present and more than 10% or 10 acres would be disturbed, whichever is less, the project would not be authorized under the GO unless the applicant submits a plan to mitigate for any significant impacts on biologically unique or sensitive natural communities and agrees to implement the mitigation~~site contains these habitats, the discharger must submit a biological report with the pre-application report that indicates measures to mitigate or avoid impacts on these habitats; this report must be forwarded to the appropriate regional office of the DFG and the Endangered Species Unit of the USFWS in Sacramento for review and approval of the mitigation strategy. The report must be prepared by a qualified biologist.

## Impact: Potential for Physiological Effects of Biosolids Application on Wildlife

Animals could potentially be affected by pathogens, organic compounds, or trace metals present in biosolids. Because sewage treatment processes are designed to reduce the concentrations of pathogens contained in biosolids, the risk to wildlife is low (Henry and Harrison 1991). Additionally, the limited research conducted on the possible effects of trace organic compounds in wildlife exposed to biosolids showed no effect on the

reproductive success of bird species and deer mice (Martin et al. 1987). However, biosolids application may affect wildlife by introducing trace metals into the environment. Exposure pathways for wildlife include foraging on plants that have incorporated metals into their tissues, breathing small quantities of aerosol mist during overhead application, drinking contaminated water, breathing dust from dried sludge while foraging, and ingesting soils amended with biosolids (Fitzgerald 1980).

Metal accumulation in wildlife exposed to biosolids can vary with application rates, biosolids quality, and type and quantity of forage. Research does not show clear trends of accumulation; however, most metal accumulation tends to be in the livers and kidneys more than in other tissues. Of all the potential trace metals found in biosolids, cadmium appears to have the greatest potential for harm because of its toxicity and bioavailability (Henry and Harrison 1991).

Studies indicate that trace metals from biosolids application to forest land accumulate at differing degrees in different wildlife species (Henry and Harrison 1991). Small mammals, including meadow voles, deer mice, and cottontail rabbits, appeared to have the greatest exposure and subsequent higher levels of trace metals when compared to birds (Henry and Harrison 1991). However, large concentrations of wintering waterfowl and shorebirds forage in the Central Valley on crops such as rice and could be exposed to higher-than-normal levels of trace metals by eating invertebrates and vegetation. Because birds are highly mobile, can forage offsite, and are present for only part of the year, exposure to trace metals and risk of trace metal toxicity would be reduced.

The GO states that biosolids cannot contain any chemical at a concentration in excess of the federal or state regulatory limits for classification as a hazardous waste. Additionally, the material quality of biosolids that are to be applied to land under the GO must comply with minimum standards for concentrations on nine trace metals regulated under the Part 503 regulations and one additional metal (chromium) added under the GO. Therefore, discharge prohibitions in the GO for trace metals will keep any potential impact to a less-than-significant level. No further mitigation would be required.

## Impacts of Other Activities

### Silvicultural Use

The use of biosolids for silvicultural use could result in greater impacts on biological resources as those described above under “Impacts on Agricultural Use” because silvicultural sites could have more existing habitat than an agricultural site. Therefore, the potential exists for land application activities to affect special-status plant and wildlife

species or biologically unique or sensitive communities. Mitigation Measures 7-1 and 7-2, described above, would reduce these potential impacts to a less-than- significant level.

## Land Reclamation

Biosolids application could result in beneficial effects in areas where reclamation activities would restore the natural vegetation or where application enhances forage for herbivores. The purpose of biosolids application is to introduce or restore organic material and nutrients to the soil to promote soil fertility and water retention. Restoring the vegetation would provide cover for wildlife. Increasing the nutrients available to plants would enhance the value of forage for herbivorous species. Biosolids application could have an impact on special-status plants or wildlife or biologically unique or sensitive natural communities where reclamation activities would occur in natural terrestrial habitats, such as in degraded rangeland. These impacts will be addressed by Mitigation Measures 7-1 and 7-2. In general, however, biosolids application for reclamation activities would be a beneficial impact and would require no mitigation.